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SUGGESTED MONTANA DOUGLAS-FIR CHRISTMAS TREE STANDARDS

by

S. Blair Hutchison & Ben M. Huey

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Experiment Station
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January 1949

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FOREWORD

On December 10, 1946, the supervisors of eight western Montana Soil Conservation districts, meeting in Kalispell, passed the following resolutions: "We recommend that western Montana districts encourage improved cultural practices on Christmas tree land, secure technical assistance in forest culture from cooperating agencies, and encourage the development of a marketing system designed to improve the quality of trees produced through a grading system with graduated prices."

The interest in grading expressed in the above resolutions resulted in the formation of a grading rule committee representing the industry and several public agencies. This committee, headed by Arthur L. Roe of the Northern Rocky Mountain Forest and Range Experiment Station, developed preliminary rules in 1947. Others on the committee were T. A. Walbridge, School of Forestry, Montana State University; L. W. Matthew, Soil Conservation Service; A. E. Anderson, Assistant State Forester; William Royer, Forester; Thain White, producer; and J. W. Fox, Forest Service.

During the 1948 Christmas tree season the Experiment Station undertook, at the request of the above committee, to test and refine the preliminary rules. The results of this study are presented in the following pages. A later publication will discuss the desirability and feasibility of grading in the Montana Christmas tree industry.

M. B. DICKERMAN, Chief
Division of Forest Economics

GRADING OF DOUGLAS-FIR CHRISTMAS TREES IN MONTANA

By
S. Blair Hutchison and Ben M. Huey

The advantages of quality standards are generally accepted in the United States. Both agricultural and industrial expansion have been paralleled by the development of grades to measure the suitability and desirability of products. A number of individuals have suggested that much would be gained by grading the Christmas trees cut in Montana. Others have felt that, because of the great variation in trees and the nature of marketing practices, grading is not feasible. In this report we are not going to discuss the pros and cons of whether grading will improve the Christmas tree industry. 1/ Rather, our attention will be limited to considering how Christmas trees might be graded should grading be desirable.

There appears to be little foundation for the claim sometimes made that the grading of Christmas trees is impossible. Certainly there are other products, now being graded, which are much harder to classify. Tea, for example, is judged by the appearance, twist and smell of the dry leaf; the color, brightness, and odor of the infusion; the color, thickness, strength, pungency and flavor of the liquid. The potency of digitalis is measured by the length of time required for sample dosages to kill frogs. Christmas trees may not be the easiest things to grade, but they are certainly not the hardest. As a matter of fact, grading of a sort is now practiced by the industry. The culling out of poor trees, done by all companies, is nothing but grading. Those companies which confine their purchases to the very best trees are applying their own stringent grade standards.

No doubt the most important difficulty with Christmas tree grading is that the tree classes can never be precisely defined. Grading trees is not like shaking peas through a sieve where — except for a few which get stuck — the dividing line is quite distinct. In Christmas tree grading the quality being measured is appearance. To a limited extent, appearance can be measured mathematically but in the main it is something which must be described in broad descriptive terms. The problem is somewhat similar to that encountered in apple grading, where such terms as "perceptibly blushed cheek," "fairly well formed," and "slight blemishes" are used.

1/ The economic feasibility of Christmas tree grading will be discussed in a later publication.

Because there are twilight zones between tree grades rather than sharp, distinct lines, Christmas tree grading will require the training of graders as in the case of most agricultural products. In no other way can there be a uniformity of interpretation of whatever rules may be devised. Whether the necessity for training and supervising graders precludes the use of Christmas tree grades is another matter.

Grading of Christmas trees may be approached from several different angles. In the following table we present one plan which seems to offer a workable procedure for grading Montana Douglas-firs. These rules, given a limited check during the past season, are still tentative. It now seems desirable to get them out where they can be given wide consideration.

Douglas-fir trees grown in Montana, like the conifers of every other region, vary widely in their suitability for Christmas decoration. Nevertheless, the factors which make for good Christmas trees are fairly simple. A first-class tree is one with nice conical shape, dense foliage, complete on all sides, and deep green color. All of these factors together constitute appearance or eye appeal. For that reason the grading rules which follow are for the most part expressed in general descriptive terms. The rules are sufficiently precise, however, that anyone who follows them closely and studies the picture should be able to classify any Christmas tree into one of three grades: No. 1 or premium, No. 2 or standard, and No. 3 or utility.

As with most grading rules there will be borderline cases. They should cause little trouble if you will, in grading, bear these points in mind:

> Grade No. 1 or premium allows variations which do not detract from the appearance of the tree from any point of view.
>
> Grade No. 2 or standard trees are less-than-perfect trees which when placed against a wall present a pleasing appearance.
>
> Grade No. 3 or utility trees are imperfect trees which are satisfactory when placed in a corner and tinselled.

PROPOSED GRADES FOR
MONTANA DOUGLAS-FIR CHRISTMAS TREES

Factor	Each grade must possess the indicated characteristics		
	No. 1 Premium	No. 2 Standard	No. 3 Utility
DENSITY	Medium or denser	Medium or denser	Light or denser
TAPER	Normal or wider	Normal or wider Candlestick if tree is otherwise grade No. 1	Normal or wider Candlestick if tree is otherwise grade No. 2
BALANCE	4 complete faces	3 or more complete faces	2 or more complete faces
FOLIAGE	Healthy	Healthy	Infected or healthy
DEFORMITY	Minor	Minor Noticeable if tree is otherwise grade No. 1	Minor Noticeable if tree is otherwise grade No. 2

CULL
Any one of following factors will cull a tree
Open
Candlestick if tree is otherwise grade No. 3
3 defective faces
Blighted
Major Noticeable if tree is otherwise grade No. 3

DESCRIPTION OF GRADING FACTORS

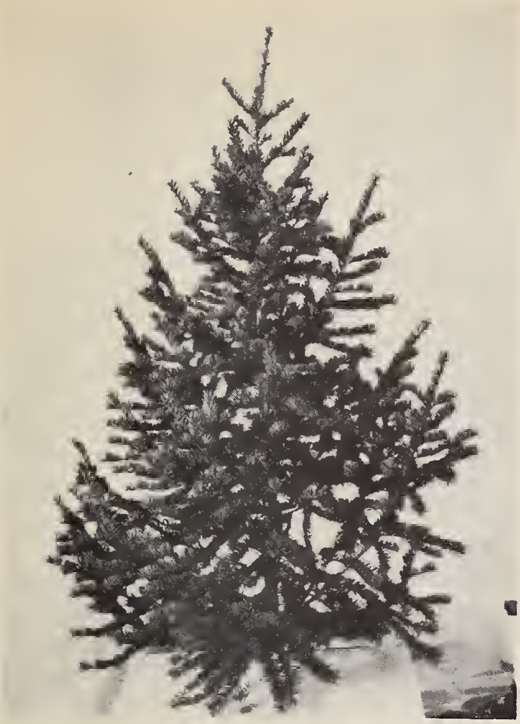
Standard sizes - The following standard sizes shall be of the lengths indicated below, measured from the bottom whorl to the end of the leader or, if the leader is spikelike, to a reasonable point on the leader. On spikelike leaders the "reasonable point" of measurement shall be the point at which the tip of the longest branch in the top whorl touches the main stem when bent upward. Trees up to and including the six-foot class shall have a six-inch handle (six inches of stem below the bottom whorl). For every one-foot increase in length class above six feet the handle shall be increased one inch.

Length class	Range of length above the bottom whorl	Trees per bale
Feet	Feet	Number
2	2 to 3	8
4	3 to 4-1/2	6
6	4-1/2 to 6-1/2	4
8	6-1/2 to 8-1/2	3
10	8-1/2 to 10-1/2	2
12	10-1/2 to 12-1/2	1

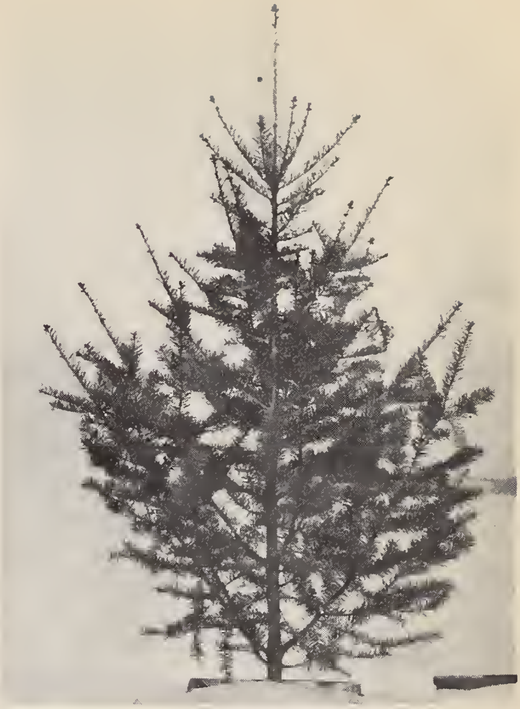
Density - Some people prefer very dense trees. Others prefer only moderately dense ones feeling that they show off the decorations better. For that reason four density classes are recognized: (1) heavy, (2) medium, (3) light, and (4) open. These density classes are shown in the following two pages.

Many trees have a different density at the top than they do at the bottom. Such trees must be rated for density on the basis of overall appearance. If the variation in density is marked, it is classed as a defect which will be discussed later.

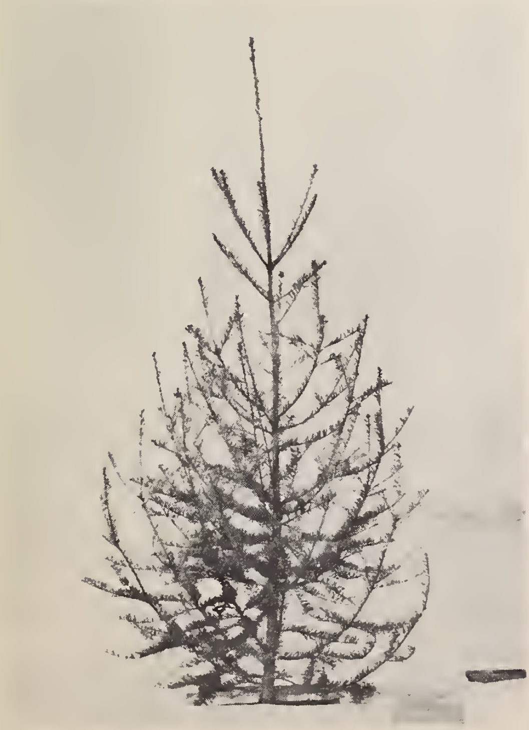
DENSITY CLASSES



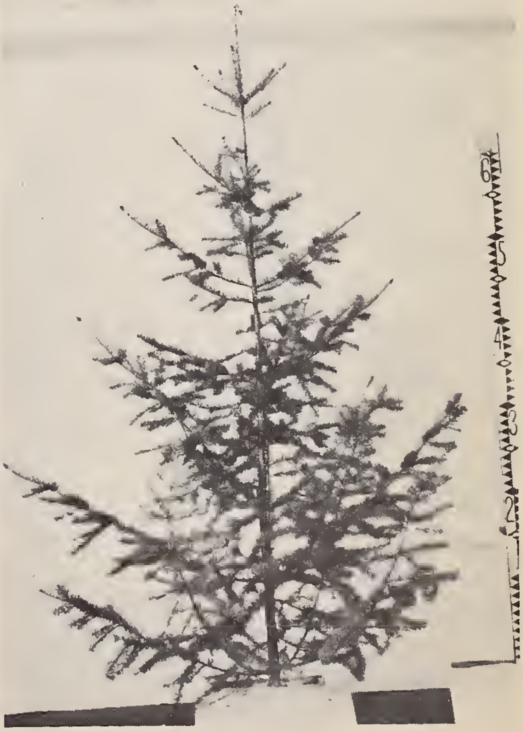
Heavy Density



Medium Density

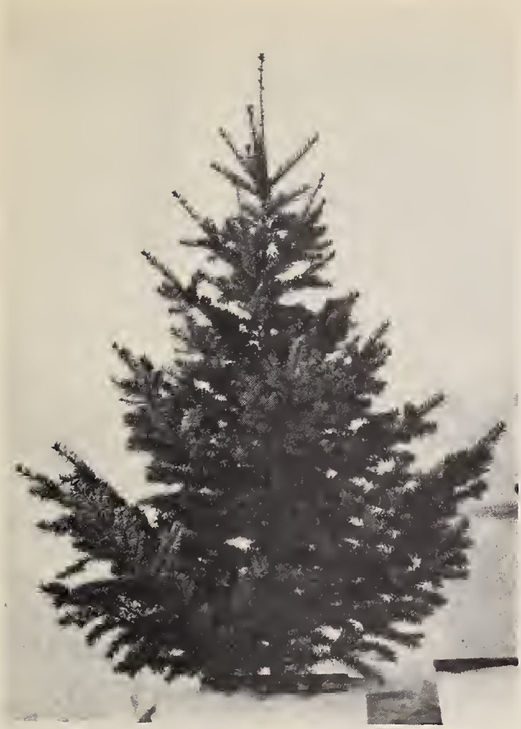


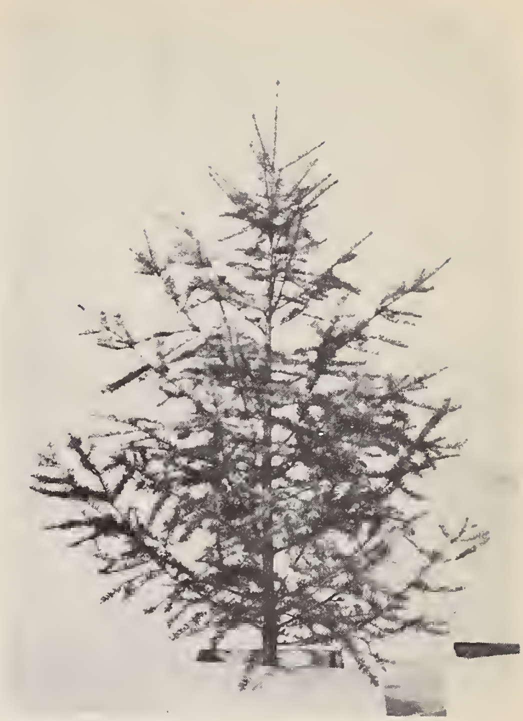
Open Density

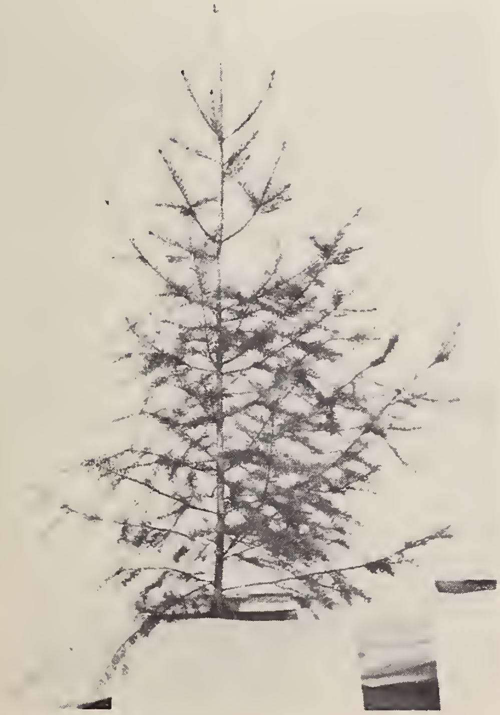


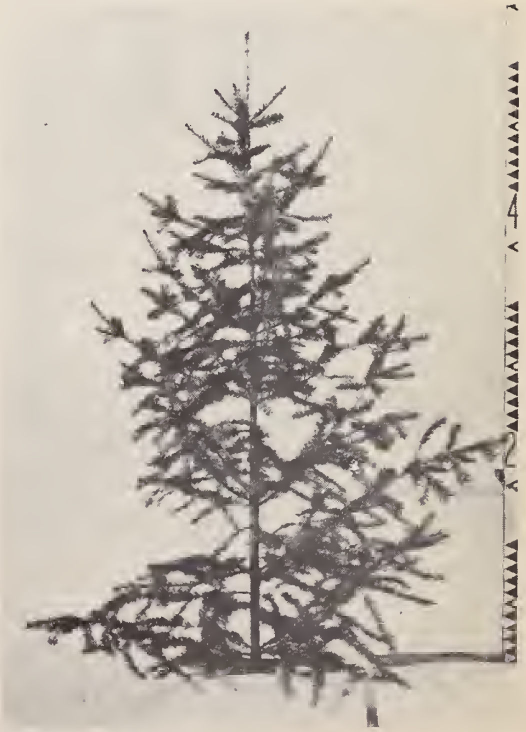
Light Density

DENSITY CLASSES


Heavy Density


Medium Density

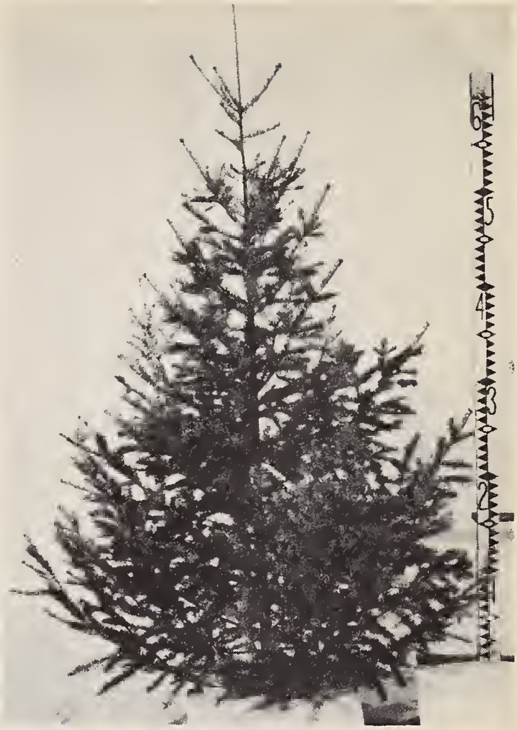

Open Density



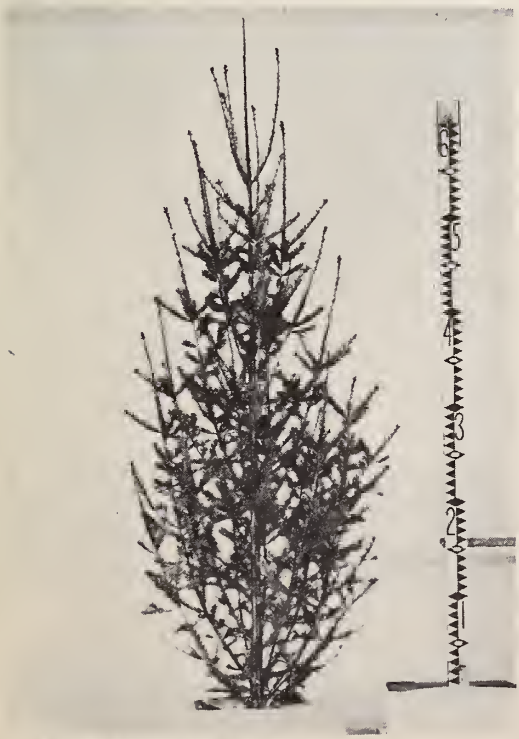
Light Density

TAPER CLASSES

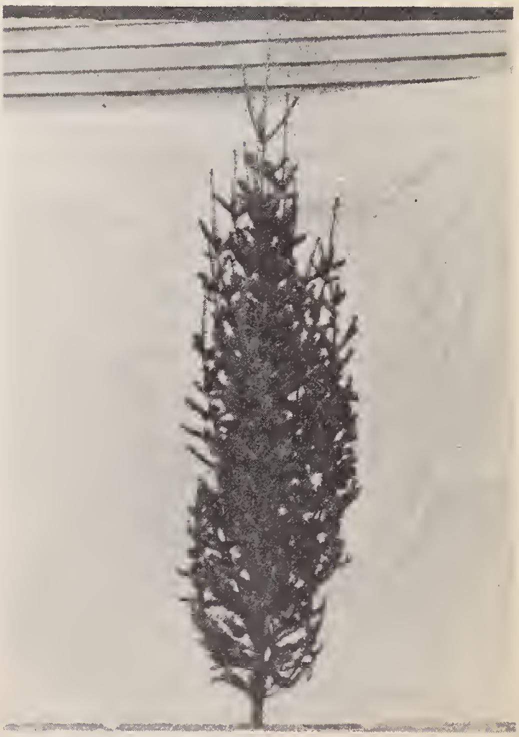
Taper - Douglas-fir trees differ widely in the rate of taper from the tip to the extremities of the lower branches. Seldom are trees too wide across the branches to be acceptable, if they are otherwise satisfactory. Some trees are too narrow, however. For that reason two general taper classes are recognized: (1) normal or wider and (2) candlestick. If a tree is so narrow that its general shape on its best side falls within a cone whose base is less than 40 percent of its crown height, that tree is classified as having candlestick taper.



Normal Taper

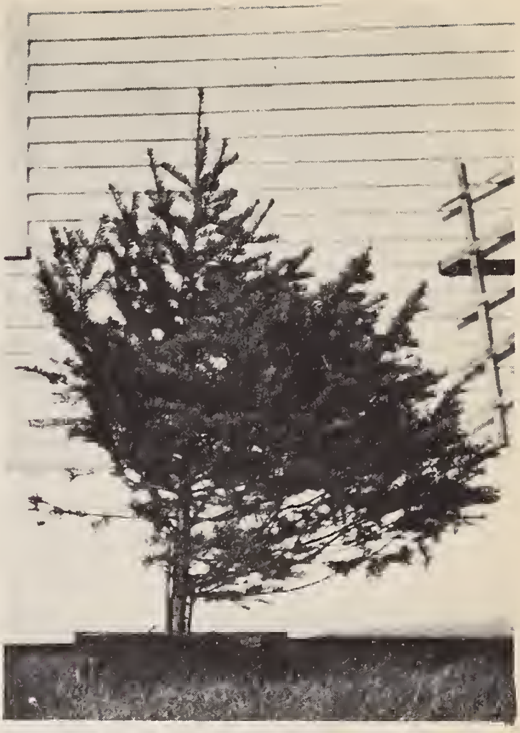


Candlestick Taper

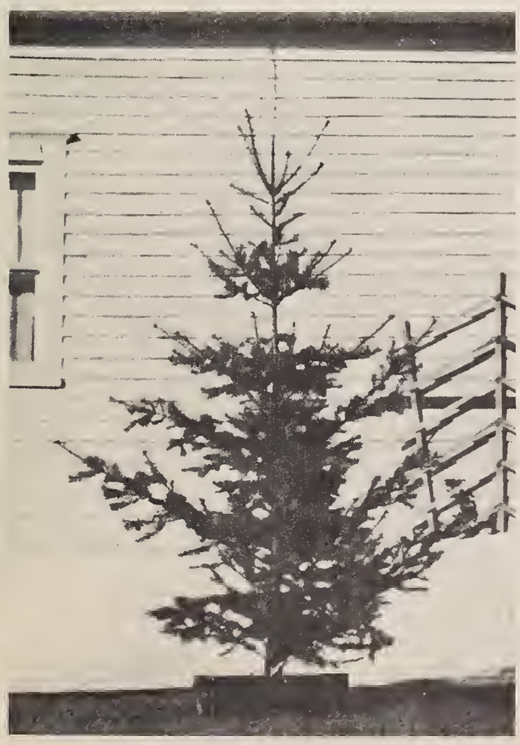


Candlestick Taper

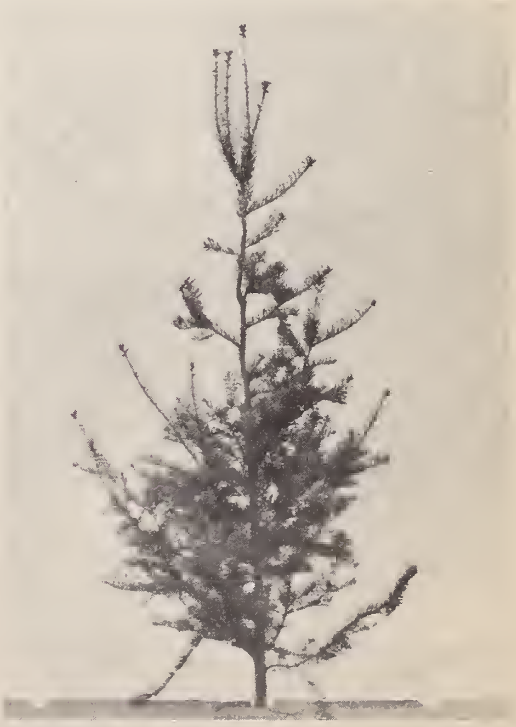
Balance - Every tree has four faces or quarters. In the most desirable tree these faces are full and well balanced; there are no gaps or protruding branches. Each face has three segments, the bottom branches, the middle, and the tip. A gap in any of the three segments, or unduly long branches in any one of them which give the tree a lopsided appearance makes the face a "defective face." Only the extreme cases can be shown pictorially but a general rule to remember is that on a complete face the branches cloak the stem with no important gaps or protrusions. Noticeable blank spaces should be treated as defective faces rather than as variation in density.



Lopsided



Blanks In Crown



Blanks In Crown

Color - Douglas-fir trees range in greens from bluish through grayish to yellowish. Color variations are so subtle that they will not, in the absence of needle blight, be considered in grading.

Foliage - A tree shall be considered "healthy" if close examination shows only occasional spots on the needles and/or very few needles missing in the foliage.

The term "infected," applying to disease, insect, and weather caused blemishes, shall include the presence of needle spots not sufficient to cause noticeable discoloration. It shall include also the absence or prospective loss of needles before Christmas, sufficient to leave noticeable blanks in the foliage.

The term "blighted" shall include the presence of needle spots or off-color foliage sufficient to cause noticeable discoloration. It shall include the absence or prospective loss before Christmas of enough needles to give the foliage a mangy appearance.

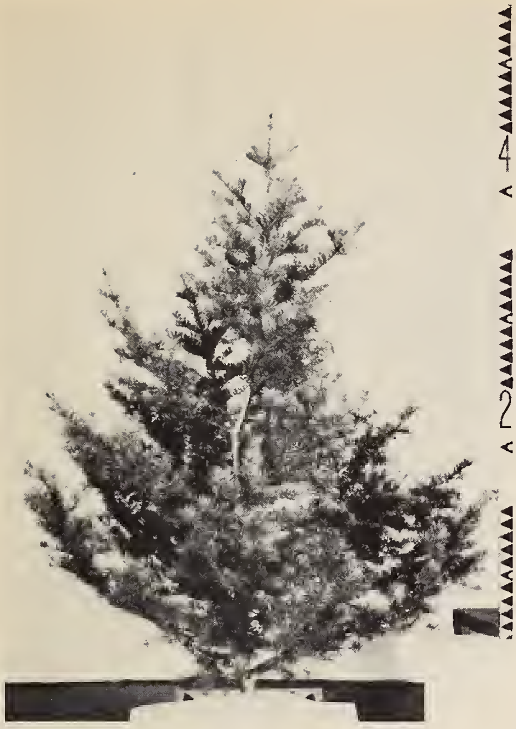
Deformities - The various deformities which may affect the appearance of a tree are divided into three classes according to severity.

1. Minor deformities include slight crooks and forks in stem or leader not affecting appearance.

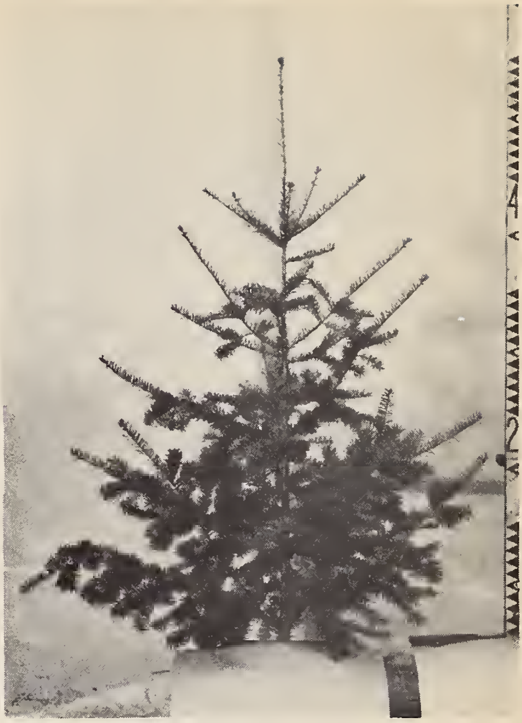
2. Noticeable deformities include fernlike weak branches, multiple leaders, woody bases, crooks in stem or leader, marked variation in density, and broken leaders, sufficient to detract somewhat from appearance but not to a major degree.

3. Major deformities include all deformities which seriously hurt the appearance of the tree.

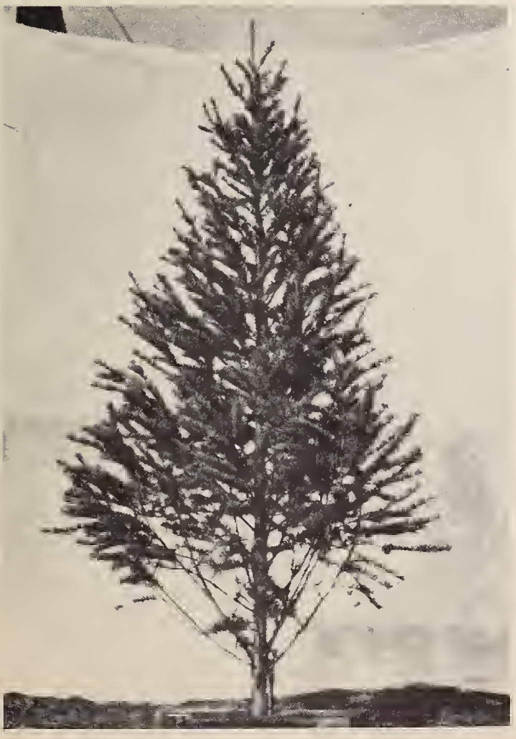
NOTICEABLE DEFORMITY



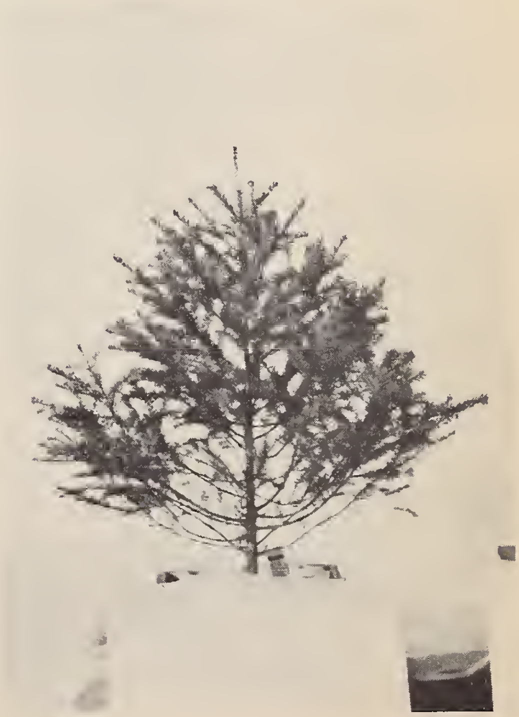
Crook



Marked Variation In Density

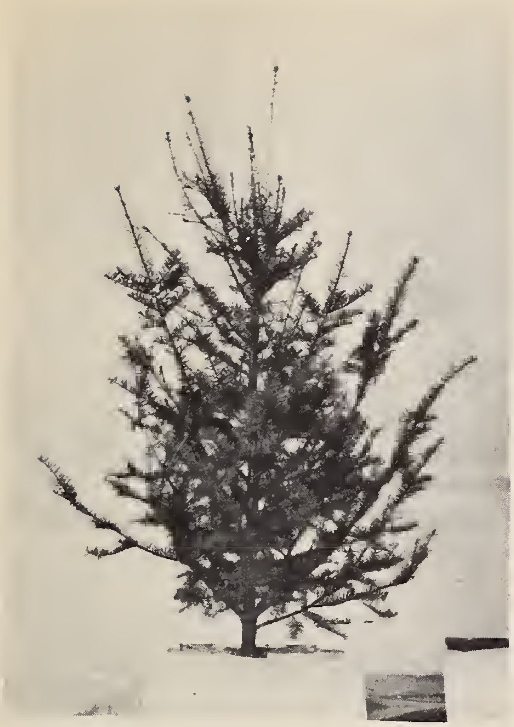


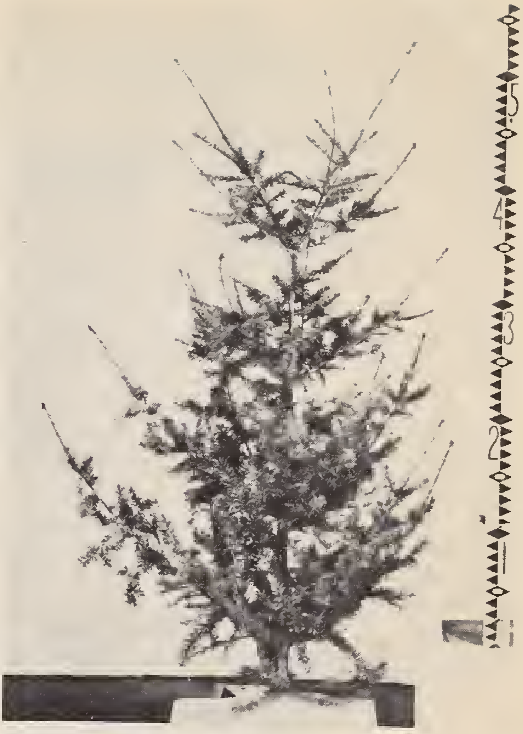
Woody Base



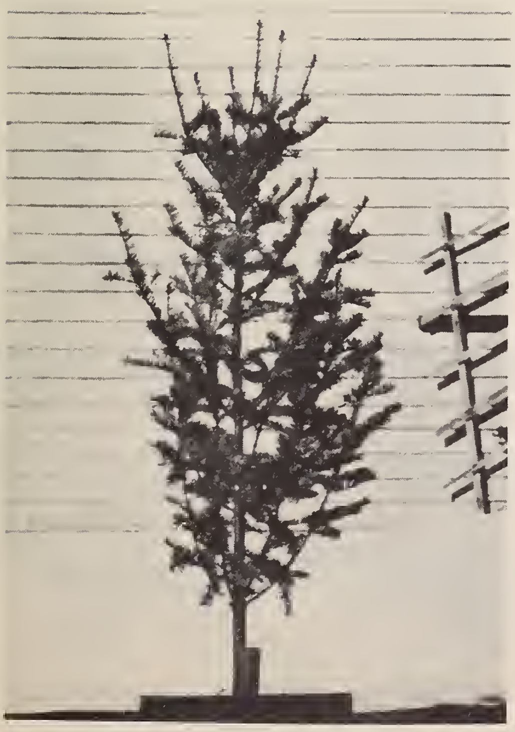
Woody Base

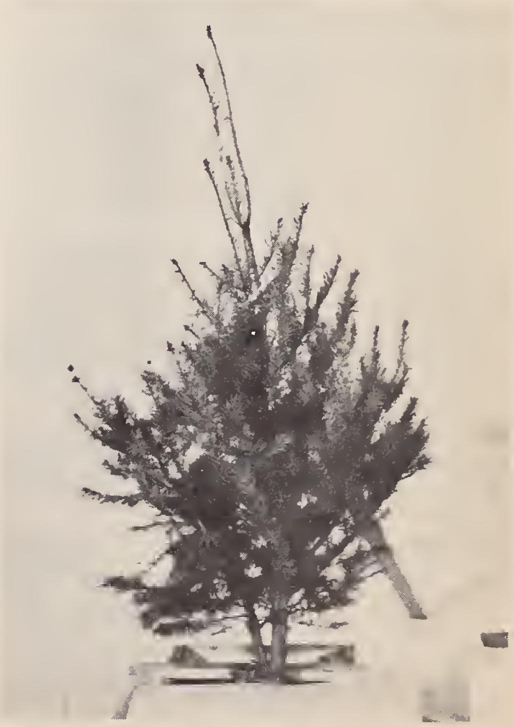
MAJOR DEFORMITY


Multiple Leader



Multiple Leader


Multiple Leader


Forked Stem At Base

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Station Paper No.

1 * A preliminary study of root diseases in western white pine, by John Ehrlich. Oct. 1939.

2 * Possibilities of partial cutting in young western white pine, by E. F. Rapraeger. Jan. 1940.

3 * Blister rust control in the management of western white pine, by Kenneth P. Davis and Virgil D. Moss. June 1940.

4 Possibilities of wood-pulp production in the northern Rocky Mountain region, by E. F. Rapraeger. Mar. 1941.

5 Results to date of studies of the durability of native woods treated and untreated, by C. N. Whitney. Rev. Jan. 1946.

6 Changes in Benewah County forest statistics, by Paul D. Kemp. July 1947.

7 A guide for range reseeding on and near the national forests of Montana, by C. Allan Friedrich. Oct. 1947.

8 Pole blight - a new disease of western white pine, by C. A. Wellner. Nov. 1947.

9 Management practices for Christmas tree production, by C. A. Wellner and A. L. Roe. Nov. 1947.

10 The merits of lodgepole pine poles, by I. V. Anderson. Nov. 1947.

11 Tables for approximating volume growth of individual trees, by P. D. Kemp and M. E. Metcalf. Mar. 1948.

12 Forest resource statistics, Cascade County, Montana, by H. J. Pissot and E. F. Peffer. Apr. 1948.

13 Forest resources of northern Montana. C. W. Brown and W. C. Hodge. June 1948.

14 List of publications available for distribution or loan, 1910 through 1947. NRM Station. June 1948.

15 Review of published information on the larch-Douglasfir type, by Russell K. LeBarron. November 1948.

16 Development of a blister rust control policy for the national forests in the Inland Empire, by Donald M. Matthews and S. Blair Hutchison. Dec. 1948.

* Out of print. Loan copies may be obtained upon request.

Station Paper No.	
17	Disintegration of girdled western hemlock and grand fir, by Austin E. Helmers. December 1948